

Notice of Allowability

Application No.

10/716,380

Examiner

David A Reifsnyder

Applicant(s)

ARNAUD, JOHNNY

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication filed on 3/15/04.
2. ☒ The allowed claim(s) is/are 27, 28, 32, 33 and 37-44 (renumbered claims 1-4 and 5-12, respectively).
3. ☒ The drawings filed on 11/14/2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 11/03 and 3/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

In The Specification

The first paragraph on page 2 has been replaced with the following amended paragraph:

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional application of co-pending application Serial No.09/879,496, originally entitled "Method and Apparatus for Mixing Fluids, Separating Fluids, and Separating solids from Fluids" which is hereby incorporated by reference herein in its entirety, now U.S. Pat. No. 6,669,843, issued December 30, 2003, entitled "Apparatus for Mixing Fluids" by Johnny Arnaud, also incorporated by reference herein in its entirety.

REASONS FOR ALLOWANCE

The main reason for the allowance of claims 27 and 28 is the instantly claimed method of mixing fluid to saturate liquids with gases comprising: inserting fluid into a

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fluid mixer via a fluid inlet in a cylindrical donut housing; flowing the fluid through a distribution channel in a ring having a plurality of grooves, the ring being concentric to the cylindrical donut housing, the ring having an outer diameter on a first end that is smaller than a diameter of the cylindrical donut housing thus defining the distribution channel; forcing the fluid in a downwardly spiral in a cylinder by passing the fluid through the plurality of grooves and into the cylinder concentric with the ring and surrounded by the ring, the cylinder in fluid communication with the distribution channel via the grooves; inserting gas into the cylinder via a gas inlet, the gas passing through a porous gas diffuser disposed within the cylinder, the diffuser having an impervious flat top; dissolving gas exiting the porous diffusion into pressurized circulating fluid, the fluid flowing in a generally downward spiral direction, the gas bubbling upward; mixing the downward spiraling fluid with the upwardly bubbling gas in a mixing zone in the cylinder; and removing a fluid saturated with gas at a fluid outlet located on a bottom surface of the cylinder.

The main reason for the allowance of claims 32 and 33 is the instantly claimed method of mixing fluid to saturate liquids with gases comprising: inserting fluid into a fluid mixer via a fluid inlet in an upper housing the upper housing having a cylindrical donut with the fluid inlet; flowing the fluid through a distribution channel in a ring having a plurality of grooves, the ring being concentric to the cylindrical donut housing, the ring having an outer diameter on a first end that is smaller than a diameter of the cylindrical donut housing thus defining the distribution channel; forcing the fluid in a downwardly

spiral in a cylinder by passing the fluid through the plurality of grooves and into the cylinder concentric with the ring and surrounded by the ring, the cylinder in fluid communication with the distribution channel via the grooves; injecting gas to the fluid leaving the grooves with an orifice ring in fluid communication with a gas inlet; separating excess gasses from the liquids in a gas separation chamber in the upper housing; discharging excess gas through a gas outlet on the upper housing; and removing saturated liquid from the cylinder via a saturated liquid outlet located at the bottom of the cylinder.

The main reason for the allowance of claim 37 is the instantly claimed method of mixing fluids comprising: inserting a first fluid into a fluid mixer via a first fluid inlet in an upper donut housing, flowing the fluid through a distribution channel in a ring having a plurality of grooves, the ring being concentric to the upper donut housing, the ring having an outer diameter on a first end that is smaller than a diameter of the upper donut housing thus defining the distribution channel; forcing the first fluid in a downwardly spiral in a cylinder by passing the fluid through the grooves and into the cylinder, the cylinder concentric with the ring and surrounded by the ring, the cylinder in fluid communication with the distribution channel via the grooves; injecting a second fluid into the fluid leaving the grooves with an orifice ring in fluid communication with a second fluid inlet, and removing the mixed fluid from the cylinder via a mixed fluid outlet located at the bottom of the cylinder.

The main reason for the allowance of claims 38-44 is the instantly claimed method of mixing fluids comprising: inserting a first fluid into a fluid mixer via a first fluid inlet in an upper donut housing; flowing the first fluid through a distribution channel in a ring having a plurality of grooves, the ring being concentric to the upper donut housing, the ring having an outer diameter on a first end that is smaller than a diameter of the upper donut housing thus defining the distribution channel; forcing the first fluid in a downwardly spiral in a cylinder by passing the fluid through the grooves and into the cylinder, the cylinder concentric with the ring and surrounded by the ring, the cylinder in fluid communication with the distribution channel via the grooves; injecting a second fluid into the first fluid for mixing therewith; and removing the mixed fluid from the cylinder via a mixed fluid outlet located at the bottom of the cylinder.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior Art

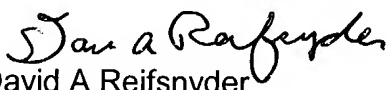
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Franklin Jr. who discloses a fluid mixing apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Reifsnyder whose telephone number is (571) 271-1145. The examiner can normally be reached on M-F 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda M Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


David A Reifsnyder
Primary Examiner
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DAR